

ABSTRACT OF THE DISCLOSURE

Embodiments of the invention generally provide isolated DNA molecules, tissue-specific expression sequences, and promoter and regulatory DNA sequences involved in the regulation of bone morphogenetic protein 4 (BMP4). More specifically, the invention relates to regulation of gene expression in a tissue-specific manner. In one aspect, the invention provides zebrafish BMP4 gene, its structural organization, its promoter, and proximal and distal regulatory regions. In another aspect, the invention provides methods for identifying potential compounds/agents, potential molecular regulators, and the expression pattern for the expression of BMP4 gene.